FIBER OPTIC ROTARY JOINT AND ASSOCIATED ALIGNMENT METHOD

ABSTRACT OF THE DISCLOSURE

A fiber optic rotary joint is provided that is unaffected by variations in the optical properties of a fluid that fills its internal cavity. The rotary joint includes a housing defining the internal cavity, first and second optical collimation arrays on opposite sides of the internal cavity, and a reversion prism between the optical collimation arrays. Further, the rotary joint includes an interface optical element proximate at least one of the first and second optical collimation arrays and the reversion prism. Each interface optical element includes an optically flat surface adapted to contact the fluid such that optical signals that are oriented normal to the optically flat surface can be transmitted without refraction, thereby rendering the optical signals immune to variations in the fluid's optical properties. A reversion prism assembly, an optical collimation assembly and a method of aligning an optical collimation array utilizing alignment pins are also provided.

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